IN THE CLAIMS

Please amend claims 1-3, 5, 7, 12-14, and 21 as indicated below.

1. (Currently Amended) A method for implementing bump mapping, comprising:

generating a table of color values for a geometry of a polygon in view of a light source and a viewing direction of the polygon, the table of color values to be referenced by orientation-dependent color variables;

determining ~~first and second~~ vertex angle coordinates for a plurality of vertex vectors of the polygon;

interpolating the ~~first and second~~ vertex angle coordinates with vertex values of the vertices of the polygon to provide ~~first and second~~ angle coordinates for each pixel in [[a]] the polygon, the ~~first and second~~ angle coordinates representing a direction of the vertex vector at the pixel;

modifying the ~~estimated~~ angle coordinates[[,]] using a perturbation source to generate perturbed angle coordinates;

converting the ~~modified~~ perturbed angle coordinates to one or more color variables; and

assigning the pixel a color value from the table of color values ~~according to~~ referenced by the one or more color variables.

2. (Currently Amended) The method of claim 1, wherein modifying the ~~estimated~~ angle coordinates includes:

generating angle perturbations based on bump coordinates of each vertex of the polygon; and

combining the angle perturbations with the angle coordinates to generate the perturbed angle coordinates.

3. (Currently Amended) The method of claim 2, wherein generating angle perturbations comprises:

estimating the bump coordinates for the pixel; and

converting the bump coordinates to angle perturbations.

4. (Previously Presented) The method of claim 3, wherein converting the bump coordinates comprises retrieving angle perturbations from a bump map location referenced by the bump coordinates.

5. (Currently Amended) The method of claim 1, wherein the plurality of vertex vectors includes at least one of a normal vector, a light source vector, and a halfway vector between the light source vector and a viewing direction of the polygon ~~estimating angle coordinates comprises:~~

~~determining angle coordinates for normal vector orientations at vertices of the polygon;~~

~~interpolating angle coordinates for the pixel from the determined angle coordinates~~.

6. (Original) The method of claim 3, wherein estimating the bump coordinates comprises:

determining bump coordinates for vertices of the polygon;

interpolating bump coordinates for the pixel from the determined vertex bump coordinates.

7. (Currently Amended) A graphics system comprising:

a geometry engine to associate vector orientation data with vertices of one or more polygons representing an object in an image;

a color map including color values for a sample of vector orientations, each color value to be referenced by one or more orientation dependent color variables;

a perturbation source to provide orientation perturbations; and

a rendering engine to

generate a table of color values for a geometry of a polygon in view of a light source and a viewing direction of the polygon, the table of color values to be referenced by orientation-dependent color variables,

determine vertex angle coordinates for a plurality of vertex vectors of the polygon,

interpolate the vertex angle coordinates with vertex values of the vertices of the polygon to provide angle coordinates for each pixel in the polygon, the angle coordinates representing a direction of the vertex vector at the pixel,

modify the angle coordinates using a perturbation source to generate perturbed angle coordinates,

convert the perturbed angle coordinates to one or more color variables, and

assign the pixel a color value from the table of color values referenced by the one or more color variables.

~~convert a vertex vector and a vertex perturbation to a pair of vertex angles and a pair of vertex perturbation values, respectively, estimate pairs of angle coordinates and perturbation coordinates for each pixel in the polygon from the pairs of vertex angles and perturbation values, respectively, generate one or more perturbed color variables using the pairs of angle coordinates and perturbation coordinates, and assign a color value from the color map to each pixel according to its one or more color variables.~~

8. (Original) The graphics system of claim 7, wherein the orientation-dependent color variables are linearly related to angle coordinates that specify the sampled vector orientations.

9. (Original) The graphics system of claim 7, wherein the perturbation source is a bump map including angle perturbations referenced by the perturbation coordinates.

10. (Original) The graphics system of claim 9, wherein the rendering engine includes a generator that combines the angle coordinates and angle perturbations into perturbed color coordinates.

11. (Original) The graphics system of claim 7, wherein the perturbation source is an algorithm for associating perturbations with polygon locations according to a property of the image.

12. (Currently Amended) A machine readable medium on which are stored instructions that are executable by a system to implement a method for assigning a color value to an image pixel, the method comprising:

generating a table of color values for a geometry of a polygon in view of a light source and a viewing direction of the polygon, the table of color values to be referenced by orientation-dependent color variables,

determining vertex angle coordinates for a plurality of vertex vectors of the polygon,

interpolating the vertex angle coordinates with vertex values of the vertices of the polygon to provide angle coordinates for each pixel in the polygon, the angle coordinates representing a direction of the vertex vector at the pixel,

modifying the angle coordinates using a perturbation source to generate perturbed angle coordinates,

converting the perturbed angle coordinates to one or more color variables, and

assigning the pixel a color value from the table of color values referenced by the one or more color variables.

~~generating color values for a sample of normal vector orientations, each color value being associated with one or more scaled angle coordinates representing a corresponding normal vector orientation;~~

~~estimating first and second angle coordinates for the pixel from angle coordinates associated with a vertex vector;~~

~~perturbing the first and second angle coordinates to provide modified first and second angle coordinates; and~~

~~retrieving at least one of the color values for the pixel according to the perturbed first and second angle coordinates.~~

13. (Currently Amended) The machine readable medium of claim 12, wherein ~~perturbing~~ modifying angle coordinates comprises:

generating ~~first and second~~ the angle perturbations for the pixel; and

combining the ~~first and second~~ angle perturbations with the ~~first and second~~ angle coordinates to form ~~modified first and second~~ perturbed angle coordinates.

14. (Currently Amended) The machine readable storage medium of claim 12, wherein the plurality of vertex vectors includes at least one of a normal vector, a light source vector, and a halfway vector between the light source vector and a viewing direction of the polygon ~~estimating comprises:~~

~~interpolating the first and second angle coordinates for the pixel from the angle coordinates associated with the vertex vector; and~~

~~converting the interpolated first and second angle coordinates to scaled angle coordinates~~.

15. (Previously Presented) A graphics system comprising:

means for associating a plurality of vertex angles with each vertex of one or more polygons representing an object in an image;

means for indicating color values for a sample of vector orientations, each color value to be referenced by one or more orientation dependent color variables;

means for providing orientation perturbations; and

means for converting the plurality of vertex angles for each polygon to a plurality of angle coordinates and perturbation coordinates for each pixel in the polygon; and

means for combining the angle and perturbation coordinates to generate a perturbed color variable and to provide at least one of the color values for each pixel with the perturbed color variable.

16. (Original) The graphics system of claim 15, wherein the providing means is a bump map including angle perturbations referenced by the perturbation coordinates.

17. (Original) The graphics system of claim 16, wherein the combining means includes a generator that combines the angle coordinates and angle perturbations into perturbed color coordinates

18. (Original) A system comprising:

a graphics pipeline; and

a memory, in which are stored instructions that are executable by the graphics pipeline to implement a method for assigning a color value to a pixel, the method comprising:

generating color values for a sample of vector orientations, each color value being associated with first and second angle coordinates representing a corresponding vector orientation;

determining a pair of vertex angle coordinates for each vertex vector of a polygon that includes the pixel;

interpolating the pairs of vertex angle coordinates to provide first and second angle coordinates for the pixel;

perturbing the first and second angle coordinates to provide modified first and second angle coordinates; and

retrieving a color value for the pixel according to the perturbed first and second angle coordinates.

19. (Original) The system of claim 18, wherein each color value is associated with first and second angle coordinates through one or more angle coordinates that index the color value.

20. (Original) The system of claim 18, wherein the graphics pipeline includes texture mapping hardware and the color values are accessed using the texture mapping hardware.

21. (Currently Amended) A computer implemented method comprising:

generating a plurality of color values for a sample of vector orientations in view of a light source and a viewing direction ~~based on properties~~ of a polygon that includes a pixel, the plurality of color values being stored in a color table referenced by one or more color variables;

determining a pair of angle coordinates for the pixel from a set of one or more vertex vectors ~~normals~~ of the polygon including at least one of a normal vector, a light source vector, and a halfway vector between the light source vector and the viewing direction of the polygon;

interpolating the pair of angle coordinates with vertex values associated with the vertices of the polygon;

modifying the interpolated pair of angle coordinates with a perturbation value;

determining a color variable with the modified interpolated pair of angle coordinates;

assigning at least one of the plurality of color values to the pixel from the color table ~~in accordance with~~ referenced by the color variable.